PATENT ABSTRACTS OF JAPAN

(11) Publication number : 2000-256990
(43) Date of publication of application : 19.09.2000

(51) Int. Cl. D21H 19/38
B41M 1/06
D21H 19/20

(21) Application number : 11-065703
(22) Date of filing : 11.03.1999

(71) Applicant : NIPPON PAPER INDUSTRIES CO LTD
(72) Inventor : MIYAWAKI SHOICHI
DOI MUNEO
OISHI MAYUMI
SEMI KATSUNORI
NANRI YASUTOKU

(54) COATED PAPER FOR OFFSET PRINTING

(57) Abstract:
PROBLEM TO BE SOLVED: To provide an offset printing coated paper excellent in printed surface strength, printing glossiness, ink drying property and high-speed processability of a coating fluid.
SOLUTION: This offset printing coated paper having a coated layer mainly comprising pigment and an adhesive is characterized by the following conditions: the coated layer contains (A) 60-90 wt.% fusiform wet ground causticized precipitated calcium carbonate as the pigment based on the total weight of all pigments and (B) a copolymer latex having 50-80 nm average particle diameter and 30-50 wt.% gel content as the adhesive.

LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The coated paper for offset printing to which a mean particle diameter is characterized by containing the copolymer latex 50-80nm and whose gel content are 30 - 50% by the spindle-like caustification precipitated calcium carbonate which carried out wet grinding to the coating layer as a pigment in the coated paper for offset printing which has the coating layer which makes a pigment and adhesives a principal component as 60 - 90 % of the weight and adhesives in [all] a pigment.
[Claim 2] The coated paper for offset printing according to claim 1 characterized by the rate for which the grain whose minor axis a major axis is 2.0-5.0 micrometers, and is 0.5-1.0 micrometers accounts being 10 - 30% in this spindle-like caustification precipitated calcium carbonate.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the coated paper for offset printing using the spindle-like precipitated calcium carbonate obtained at a caustification process.
[0002]
[Description of the Prior Art] The need in an aiming at advertisements [, such as a catalog for mail orders, a throwaway, a catalog, a pamphlet, and direct mail,] and advertisement commercial-in print sheet printing field is extended in recent years. Although the goods value of itself of these commercial printed matter is low, since it is important that the purpose is attained as an advertisement medium, it is asked for the good thing of a printing result by the low cost. Since it corresponds to the need of such a flourishing coated paper, it is an important technical technical probrem to raise a productivity by the paper manufacturer, with a high quality maintained, and to aim at a cost cut. therefore, cheaper materials and a chemical -- using it -- further -- (1) -- efforts to manufacture the product excellent in cost competitive strength by high speed (2) double-width-ized (3) online production-ized (integrated production from paper making to application and surface finish) (4) multilayer application-ization etc. are continued
[0003] On the other hand, after going into a low-growth time age in recent years, in connection with lightweight-izing and low-cost-izing of a print sheet, grade down of low ****** is advancing quickly in the coat paper of A grade. It is asked for obtaining the product which the demand to the print sheet which performs a pigment coating is excellent in high-speed operation nature, and whose opacity is high, is excellent in a printing strike-through and a printing surface intensity, and is excellent in a blank paper and printing gloss in such status under a high productivity. When making it especially lightweight-ization, the improvement of opacity and a printing strike-through is important, and improving opacity, a printing strike-through, and a whiteness degree is known by using the shape of big spindle and the pillar-shaped precipitated calcium carbonate of specific surface area for the pigment for an application.
[0004] However, although opacity and the printing strike-through have been improved, since the precipitated calcium carbonate which has these specific configurations was manufactured at the reaction (a carbon-dioxide-gas method is called henceforth) of the milk of lime and carbon dioxide gas according to the conventional process, a unit price is high like a kaolin and a steep manufacturing-cost rise was not avoided in the displacement from a cheap whiting.
[0005] Moreover, when this invention person etc. used the spindle-like precipitated calcium carbonate obtained by the describing [above] carbon-dioxide-gas method for an offset-printing form, it accepted that there was a problem that an ink drying property is late. Therefore, while improvement in the speed of a printing machine progressed further in recent years, the need of making an ink drying property much more quick was searched for.
[0006] moreover, in order to raise a productivity like the above, in connection with improvement in the speed of a blade coating machine etc., that the occurrence frequency of ******** tightness or a bleeding

trouble (phenomenon in which the aggregate of application liquid adheres to the edge of a blade of a blade) increases knows -- having -- **** -- the shape of spindle, a needle, and a pillar-shaped grade -- since the viscosity under a high shear rate tends to have become high, it is asked for the better thing of the high-speed operation nature in the above-mentioned blade, and it was in

[0007] By there not being gloss nonuniformity and printing (mottling, trapping) nonuniformity, when this invention person etc. does the amount combination of the non-ground spindle-like caustification precipitated calcium carbonate of specialization in Japanese Patent Application No. 263943 [nine to], the ink drying property was quick and it accepted excelling in the high-speed operation nature in a blade coating machine etc. However, the inclination that printing glossiness falls was suited instead of the ink drying property having become quick. Generally, the low-molecular vehicles (solvent etc.) in the ink transferred at the time of printing space involuntarily the relation between an ink drying property and printing glossiness into a coating layer, it is a property whose set (fixation) of quick ink is enabled, and when an ink drying property is quick, it is in the inclination that printing gloss falls by the ability also of an ink pigment to be drawn near into a coating layer in connection with penetration of a vehicle. Therefore, an ink drying property is quick and it was asked for the good thing of the balance with high printing glossiness. Moreover, it was asked for what has still good high-speed operation nature in connection with the latest improvement in the speed.

[0008]

[Problem(s) to be Solved by the Invention] In view of the above statuses, the technical probrem of this invention offers the coated paper for offset printing which was excellent in a printing surface intensity, printing glossiness, and the ink drying property, and was excellent in the high-speed operation nature of coating liquid in the coated paper for offset printing.

[0009]

[Means for Solving the Problem] As a result of this invention person's etc. examining this technical probrem zealously, in the coated paper for offset printing which has the coating layer which makes a pigment and adhesives a principal component, a spindle-like caustification precipitated calcium carbonate came to accomplish this invention as a pigment in a coating layer as 60 - 90 % of the weight and adhesives in [all] a pigment, when a mean particle diameter contained [50-80nm and a gel content] the copolymer latex which is 30 - 50%.

[0010] It excelled in this invention at the high-speed operation nature of coating liquid by blending the diameter copolymer latex of a granule which high-blended with the coating layer what ground the spindle-like precipitated calcium carbonate obtained at the caustification process as a pigment, and adjusted the gel content as adhesives, and found out that the coated paper for offset printing equipped with a printing surface intensity, printing gloss, and the ink drying property with the sufficient balance as a coated-paper quality was obtained.

[0011] When wet grinding of the spindle-like caustification precipitated calcium carbonate was carried out, as compared with the coating liquid which high-blended the caustification precipitated calcium carbonate of the shape of non-ground spindle, the high ******** viscosity of coating liquid was low, and it became clear that high-speed operation nature is improved more. It is thought that the flocculation nature which a spindle-like caustification precipitated calcium carbonate originally has when shearing force strong in a grinder is received although it now is not clear about a detailed device in to why the viscosity of a precipitated-calcium-carbonate pigment slurry falls by trituration, and a configuration breaks moderately will be improved, and grain will be for the dispersant added in a slurry while it is hard coming to condense to demonstrate an effect more re-. In addition, especially in this invention, if a part for 1300m/in coating speed is exceeded, an effect will appear notably. It reached and there was a problem whose wet intensity falls a little as that a dry intensity and printing gloss improve as a merit in the quality of the coated paper for printing which high-blended the spindle-like caustification precipitated calcium carbonate which carried out wet grinding, and a demerit that an ink drying property was late a little. Since this has the high hydrophilicity of a spindle-like caustification precipitated-calcium-carbonate front face, it is considered to originate in specific surface area having become large by grinding.

[0012] then, the thing for which a mean particle diameter diameter[of a granule]-izes a copolymer latex with 50-80nm, and we adjust the gel content of a latex to 30 - 50% -- it is -- a dry intensity and a wet intensity -- improving -- further -- an ink drying property -- quick -- and printing gloss -- it found out becoming it being high and good It is thought that the ground nil why an ink drying property is quick and printing gloss is also high is only for the solvent in an ink vehicle to permeate a coating layer quickly as a result of forming the vas capillare with a comparatively small path in a coating layer.
[0013] Although a wet intensity improves when the amount of combination of the ground spindle-like caustification precipitated calcium carbonate is less than 60 % of the weight, printing glossiness and a dry intensity fall and high-speed operation nature also gets worse. Moreover, if 90 % of the weight is exceeded, although printing glossiness will improve and a printing surface intensity will be good-ized, an ink drying property is late and is inferior in the high-speed operation nature of coating liquid. Moreover, although a printing surface intensity will improve and an ink drying property will become quick if the spindle-like caustification precipitated calcium carbonate not to grind is used, printing glossiness falls.
[0014] Although a dry intensity improves when the particle diameter of the diameter latex of a granule is less than 50nm, a wet intensity falls. Moreover, if the particle diameter of a latex exceeds 80nm, the operation nature of coating liquid will fall and the printing surface intensity which can be satisfied will not be obtained. Since a printing surface intensity falls and an ink drying property becomes quick when a gel content is less than 30%, printing gloss falls. Moreover, although a dry intensity and printing gloss improve in exceeding 50%, an ink drying property becomes late, a wet intensity falls, and neither is desirable. In this invention, it is desirable that the rate for which the grain whose minor axis a major axis is 2.0-5.0 micrometers, and is 0.5-1.0 micrometers accounts about the spindle-like caustification precipitated calcium carbonate which carried out wet grinding is 10 - 30%. When the rate for which the grain whose minor axis a major axis is 2.0-5.0 micrometers, and is 0.5-1.0 micrometers accounts is less than 10%, a printing surface intensity becomes weak and printing glossiness tends to fall. Moreover, although a printing surface intensity improves in [than 30% of the rates for which the grain whose minor axis a major axis is 2.0-5.0 micrometers, and is 0.5-1.0 micrometers accounts] more, the high ******** viscosity of coating liquid becomes high, is inferior to high-speed operation nature, and is in the inclination that printing glossiness falls.
[0015]
[Embodiments of the Invention] The precipitated calcium carbonate of the shape of spindle specified by this invention uses what was manufactured at the caustification process of the pulp manufacturing process by the sulphate process or the soda method. In the pulp manufacturing process by the sulphate process or the soda method, in order to isolate the fibrin in wood, a digestion is carried out under an elevated temperature and the hyperbaric pressure using the medical fluid which mixed the sodium hydroxide and the sodium sulfide. And separation refining of the fibrin is carried out as ****, it serves as pulp, and elution components other than a medical fluid and the fibrin from wood are collected as a pulping waste liquor (black liquor), and are condensed to the concentration which can burn by the recovery boiler. Furthermore, in order to supply a part for sodium and the sulfur content which were lost in process of a series, after adding a sodium sulfate, it burns by the recovery boiler. Although ********s in a black liquor are collected and mineral matters are mainly collected as a sodium carbonate and a sodium sulfide as a heat source in that case, these inorganic substances are called ******** and taken out from a recovery boiler in the state of melting. It is melted with water or weak liquid (the white-liquor component obtained after carrying out the backwashing by water of the calcium carbonate minute amount **** saliva), and ******** taken out from the recovery boiler serves as ****.
[0016] A caustification process is a process for changing the sodium carbonate in **** into the sodium hydroxide which is a digestion chemical, and it consists of a slaking reaction (1) which changes calcined lime into slaked lime, and a caustification reaction (2) which mixes **** with slaked lime and generates a sodium hydroxide and a calcium carbonate. The liquid obtained by the caustification reaction is called white liquor, and a defecation is separated and carried out to a calcium carbonate, and it is sent to a digestion process. In this invention, the calcium carbonate by which carries out separation recovery and

the backwashing by water was fully carried out is used.
CaO+H20 ->calcium2 (OH) (1):slaking reaction calcium (OH) 2+Na2CO31CaCO3+2NaOH Since the calcium carbonate of (2):caustification ****** is a by-product at the time of manufacturing the white liquor which is the main production, it can manufacture a product by the low cost very much compared with the precipitated calcium carbonate obtained by the technique by the reaction of conventional milk of lime and carbon dioxide gas.
[0017] Furthermore, the precipitated calcium carbonate of the shape of spindle specified in this invention is manufactured according to the following manufacturing methods. It generates at (1) caustification process. Namely, and/ Or are the calcined lime introduced from the outside of a caustification process, and the above-mentioned calcined lime containing a (2)0.1-10 % of the weight calcium carbonate is received. A white liquor is added so that calcined-lime concentration may become 0.5 - 60% of the weight. **** or the first step process which is made to carry out a slaking and generates milk of lime and/or lime mud while carrying out a mixing, Subsequently, with this milk of lime and/or lime mud, generate at the above-mentioned caustification process, and **** of the specified quantity required to manufacture a white liquor is serially added at the addition speed of 0.02-50ml(****)/min/g (calcined lime) to this milk of lime and/or lime mud with them. It manufactures by performing a caustification reaction with the reaction temperature of 20-105 degrees C.
[0018] Wet grinding of the caustification precipitated calcium carbonate of the shape of spindle manufactured in this way is moderately carried out with grinders, such as a bead mill, and it is used.
[0019] The attritor very generally used for wet grinding of the pigment for paper manufacture as a grinder used by this invention, . to which a vibration mill, a ball mill, a vertical-type sand mill, a horizontal-type sand mill, a jet mill, etc. are mentioned -- again If the spherical ball manufactured from hard raw materials, such as glass, a ceramic, an alumina, and a zirconia, as a trituration media is mentioned and a particle diameter takes into consideration . efficiency of comminution with desirable it being 0.1-10mm Since a motion of the media within a pulverization chamber is restricted and an efficiency of comminution is conversely reduced when a filling factor is too high although the filling factor of a media has as high the desirable one as possible, according to the grinder to use, it adjusts suitably.
[0020] Moreover, the whiting generally used in addition to the spindle-like caustification precipitated calcium carbonate specified above, other precipitated calcium carbonates, a kaolin, clay, talc, a satin white, a silica, a plastics pigment, one or more sorts of titanium dioxides, etc. are used for the pigment in the coating layer of this invention.
[0021] A styrene butadiene copolymer, a styrene butadiene acrylic copolymer, or its denaturation object is used, and the adhesives used into a coating layer have the desirable things for which vinyl system unsaturated carboxylic acids, such as a vinyl compound or an acrylic acid, and a fumaric acid, are used in addition to this, such as a vinyl system unsaturated-carboxylic-acid ester compound besides methyl methacrylate besides styrene and a butadiene, and an acrylonitrile, as a monomer of these polymers. The amount of combination in a coating layer has desirable 8 - 12 weight section to the pigment 100 weight section. Although the high-speed operation nature, the printing surface intensity, and printing glossiness of coating liquid improve in a printing surface intensity and printing glossiness tending to fall and exceeding 12 weight section, while the fluidity of coating liquid gets worse, when the amount of combination of the diameter latex of a granule is under 8 weight section, an ink drying property becomes late and is in an inferior inclination.
[0022] Moreover, as starch used together, an oxidized starch, phosphate-ized starch, etherification starch, enzyme denaturation starch, cold-water fusibility starch, etc. are used. You may use the various assistants blended with the usual pigments for coating liquid, such as a dispersant, a thickener, a water retention rate, a defoaming agent, and a deck-watertight-luminaire-ized agent, for the coating liquid of this invention. 60 - 68% of the solid-content concentration of coating liquid is desirable.
[0023] As stencil paper used by this invention, a mechanical pulp, a chemical pulp, used paper recovery pulp, etc. are mixed by arbitrary proportion, it is used, and the paper manufacture raw material which added the loading material for paper manufacture, a paper durability reinforcement agent, a usual yield

improver, a usual sizing compound, etc. if needed is milled with the usual paper machine which has a single wire or a twin wire. In that case, as a stencil paper basis weight, 30-100g/m2 is 30-60g/m2 desirable still preferably, and paper of fine quality and a report grade paper are chosen for the purpose, and it is used.

[0024] In this invention, although especially the method of carrying out the coating of the coating liquid to stencil paper, and preparing a coating layer is not limited and various coating equipments, such as a blade coating machine, a roll coater, one air ******** evening, one ****** evening, and a rod blade coating machine, can be used by the on-machine or the off machine, especially a blade coating machine is desirable. As a blade coating machine, a bevel type or a vent type blade coating machine, a building blade, rod ******, a short dwell coating machine, a twin blade, etc. are used, and it is a desirable bevel type blade coating machine. the amount of coatings of this invention -- usually -- per one side -- a solid content -- 6-30g/m2 -- it is 6-15g/m2 preferably Moreover, you may prepare the coating layer of this invention in stencil paper or the stencil paper which carried out the under coat coating at a monolayer or a multilayer.

[0025] Although the coated paper which carries out the coating of the coating liquid of this invention, and is obtained is produced commercially as a coated paper for printing using surface-finish equipments, such as a supercalender, a gross calender, and a soft calender, it can perform light finishing processing or can also obtain the coated paper for printing of the low matte tone of gloss by-less processing. Moreover, either a sheet or rolling up of the coated paper for printing of this invention is possible for offset printing.

[0026]

[Example] Although an example is given to below and this invention is more concretely explained to it, of course, it is not limited to the domain. In addition, the section in an example and % show weight section and weight %, respectively.

A major axis and the minor-axis average were measured by the major axis of the <quality evaluation technique (1)> precipitated calcium carbonate, and the minor-axis:scanning electron microscope (JEOL JSM-5300).

(2) The sample diluted to the mean-particle-diameter:0.05 - 0.2% concentration of a latex was prepared, the absorbance with a wavelength of 525nm was measured, and it asked by the calibration curve created beforehand. (3) The sample was paid to the container and it dried one whole day and night so that it might be thin to 1mm on a glass plate in the gel content:sample (copolymer latex) of a latex, and the reduced pressure drying was carried out further one whole day and night. It filtered by the glass filter of weight known after 24 hour immersing and lysis, and it dried, weighing capacity of the toluene soluble was carried out [weighing capacity was carried out precisely / the copolymer latex film obtained in this way / about 0.3g,] to 50ml toluene, and the gel content was computed by the following formula.

a (xeransis film weight-toluene-soluble weight) / xeransis film -- a weight x100(4) printing glossiness:RI-I type printing machine (dawn factory) -- using -- the product (TK highness plus red ink) made from Oriental ink -- using it -- amount of ink 0. -- it was fixed 18 or 0.25ml, and printed The glossiness of each printed matter was measured by the glossmeter (Murakami color technical research center GM-26D), ink concentration was measured with the Macbeth reflection density meter (RD918), the glossiness in ink concentration 1.5 was computed, and it considered as printing glossiness.

(5) Use the product (TK mark V617) made from Oriental ink using an ink drying-property:RI-I type printing machine (dawn factory). It is fixed the amount of 0.5ml of ink, print, put a transfer paper on a printing side immediately after printing, and the backing strip of the blank paper is carried out to the sample after . blank paper which rotated the printing drum and imprinted the printing side 45 seconds after, and an ink imprint. The reflection factor was measured by the hunter reflectometer (Oriental energy machine factory), and the difference of both reflection factors was made into the ink drying property.

(6) a wet on-the-strength:RI-I type printing machine (dawn factory) -- using -- a sample -- wetting -- water -- giving -- after 5 seconds -- TK highness plus red ink made from Oriental ink -- using it -- amount of ink 0.3ml -- it was fixed, and printed and relative evaluation was visually made on the

********** grade of a printing side
[0027] O = -- O= which is not generated at all -- the hardly generated (7) dry on-the-strength:RI-II type printing machine (made in a dawn factory) with remarkable x= occurrence of which **= occurrence is done -- using -- the product made from Oriental ink -- ** **-24 were used, and it was fixed the amount of 0.35 cc of ink, and printed, and relative evaluation was visually made on the ********** grade of a printing side
[0028] O = -- O= which is not generated at all -- the time of the (8) ******** tight evaluation:coating with hardly generated remarkable x= occurrence of which **= occurrence is done -- ******** -- the tight occurrence status was observed visually
[0029] O = -- O= which is not generated at all -- wet grinding of the hardly generated spindle-like precipitated calcium carbonate by which x= occurrence of which **= occurrence is done was manufactured in the caustification process of a remarkable [example 1] kraft pulp manufacturing process was carried out using the bead mill The spindle-like precipitated-calcium-carbonate 70 section, the whiting 8 section which carried out trituration processing, The 0.3 sections are added for a sodium-polyacrylate system dispersant to the pigment 100 section which carried out kaolin 22 section combination. It distributes in water using a cow loess disperser. a mean particle diameter as adhesives 65nm, The 12.0 sections and the 3.3 sections of phosphate-ized starches were blended for the styrene butadiene system copolymer latex whose gel content is 40% to the pigment 100 section, and finishing coating liquid of 65% of solid-content concentration was prepared. In the ground spindle-like caustification precipitated calcium carbonate, the rate for which the grain whose minor axis a major axis is 2.0-5.0 micrometers, and is 0.5-1.0 micrometers accounts was 18%.
[0030] 54g of basis weights/and m2 ********ed the above-mentioned coating liquid, the high-speed fountain blade coating machine was used for kraft pulp independent combination stencil paper, and the coating of 8g/m2 was carried out to both sides by the solid content per one side by part for 1400m/in coating speed. Furthermore, surface finish (linear pressure of 220kg/cm) was carried out using the 12 step supercalender.
To the [example 2] whiting 20 section, the precipitated-calcium-carbonate 76 section, and the 2nd class kaolin 4 section, the 0.3 sections were added, the sodium-polyacrylate system dispersant was distributed in water using the cow loess disperser, as adhesives, the 26 sections were blended [the styrene butadiene system copolymer latex] for the 3.5 sections and phosphate-ized starch, and under coat coating liquid of 40% of solid-content concentration was adjusted.
[0031] Next, wet grinding of the spindle-like precipitated calcium carbonate manufactured in the caustification process of a kraft pulp manufacturing process was carried out using the bead mill. The spindle-like precipitated-calcium-carbonate 70 section, the whiting 8 section which carried out trituration processing, The 0.3 sections are added for a sodium-polyacrylate system dispersant to the pigment 100 section which carried out kaolin 22 section combination. It distributes in water using a cow loess disperser. a mean particle diameter as adhesives 68nm, The 13.0 sections and the 3.8 sections of phosphate-ized starches were blended for the styrene butadiene system copolymer latex whose gel content is 41% to the pigment 100 section, and finishing coating liquid of 65% of solid-content concentration was prepared. In the ground spindle-like caustification precipitated calcium carbonate, the rate for which the grain whose minor axis a major axis is 2.0-5.0 micrometers, and is 0.5-1.0 micrometers accounts was 18%.
[0032] The amount of coatings carried out 5g[/m] 2 coating per solid content of the under coat coating liquid to 45g of basis weights/, and the stencil paper of m2 by both sides using the gate roll coater whose coating speed is a part for 800m/, the under coat coated paper was obtained and the amount of coatings carried out 15g[/m] 2 coating per solid content of the finishing coating liquid to the under coat coated paper by both sides further using the blade coating machine whose coating speed is a part for 1400m/. Subsequently, supercalender processing (number-of-stages:11 step, linear pressure of 200kg/cm) was performed, and the coated paper for offset printing was obtained.
The coated paper for printing was obtained by the completely same technique as an example 1 except making the amount of combination of a spindle-like caustification precipitated calcium carbonate into

the 87 sections in the [example 3] example 1.
The coated paper for printing was obtained by the completely same technique as an example 1 except setting the particle diameter of the diameter latex of a granule to 52nm in the [example 4] example 1.
The coated paper for printing was obtained by the completely same technique as an example 1 except setting the particle diameter of the diameter latex of a granule to 79nm in the [example 5] example 1.
The coated paper for printing was obtained by the completely same technique as an example 1 except making the gel content of the diameter latex of a granule into 33% in the [example 6] example 1.
The coated paper for printing was obtained by the completely same technique as an example 1 except making the gel content of the diameter latex of a granule into 49% in the [example 7] example 1.
The coated paper for printing was obtained by the completely same technique as an example 1 except having used the spindle-like caustification precipitated calcium carbonate which is not ground in the [example 1 of comparison] example 1.
The coated paper for printing was obtained by the completely same technique as an example 1 except making into the 55 sections the amount of combination of the spindle-like ****-ized precipitated calcium carbonate ground in the [example 2 of comparison] example 1.
The coated paper for printing was obtained by the completely same technique as an example 1 except making into the 96 sections the amount of combination of the spindle-like ****-ized precipitated calcium carbonate ground in the [example 3 of comparison] example 1.
The ** ** paper for printing was obtained by the completely same technique as an example 1 except setting the particle diameter of the diameter latex of a granule to 95nm in the [example 4 of comparison] example 1.
The ** ** paper for printing was obtained by the completely same technique as an example 1 except setting the particle diameter of the diameter latex of a granule to 43nm in the [example 5 of comparison] example 1.
The coated paper for printing was obtained by the completely same technique as an example 1 except making the gel content of the diameter latex of a granule into 25% in the [example 6 of comparison] example 1.
The coated paper for printing was obtained by the completely same technique as an example 1 except making the gel content of the diameter latex of a granule into 64% in the [example 7 of comparison] example 1.
[0033] The above result was shown in Table 1 and 2.
[0034]
[Table 1]

表 1

	印刷光沢度 (%)	インキ乾燥性 (%)	ウエット強度	ドライ強度	スタラクタイト評価
実施例 1	77	18	◎	◎	◎
〃 2	75	16	◎	◎	◎
〃 3	79	21	○	◎	○
〃 4	80	23	○	◎	◎
〃 5	76	19	◎	○	○
〃 6	75	15	◎	○	◎
〃 7	78	18	○	◎	◎

[0035]
[Table 2]

表2

	印刷光沢度 (%)	インキ乾燥性 (%)	ウエット強度	ドライ強度	スタラクタイト評価
比較例1	70	11	○	○	○
〃 2	69	12	◎	×	×
〃 3	83	28	○	◎	×
〃 4	72	13	△	×	△
〃 5	79	20	△	◎	○
〃 6	71	11	△	×	○
〃 7	84	30	△	◎	○

Examples 1-7 are excellent in printing glossiness, an ink drying property, and a printing surface intensity, and are excellent in the high-speed operation nature of coating liquid so that clearly from Table 1 and 2. On the other hand, the example 1 of a comparison is inferior to printing glossiness. The example 2 of a comparison is inferior to printing glossiness, a dry intensity, and high-speed operation nature. The example 3 of a comparison is inferior to an ink drying property and high-speed operation nature. The example 4 of a comparison is inferior to printing glossiness, a wet intensity, a dry intensity, and high-speed operation nature. The example 5 of a comparison is inferior to a wet intensity. The example 6 of a comparison is inferior to printing glossiness, a wet intensity, and a dry intensity. The example 7 of a comparison is inferior to an ink drying property and a wet intensity.

[0036]

[Effect of the Invention] The coated paper for offset printing which was excellent in the balance of printing glossiness, an ink drying property, and a printing surface intensity, and was excellent in the high-speed operation nature of coating liquid with this invention can be obtained.

[Translation done.]